



US Army Corps
of Engineers®

USACE Knowledge Management (KM) Strategic Plan

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Executive Summary

Knowledge Management (KM) is an integrated, systematic approach to identifying, managing, and sharing all of an enterprise's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual workers. Informally, KM is a way of putting information, communities, processes, and tools together to allow people to do better work and make better decisions.

There must be sound business reasons for formally pursuing KM initiatives, as there are significant associated costs. KM should be applied to business areas that will yield best value, e.g., customer intimacy, product-to-market excellence, or operational excellence. Three important aspects, or dimensions, of KM are **people**, **content**, and **technology**. For a successful program, each proposed KM initiative must include a strategic blend of all three of these elements.

The Corps' **vision** for KM is to create a performance support environment with the tools and business processes necessary for Corps' individuals, teams, and communities to optimize the effective application of intellectual capital to achieve organizational objectives.

The purpose of the USACE Knowledge Management Strategic Plan is to establish the framework for implementing a formal, integrated KM Program for the U.S. Army Corps of Engineers (USACE). This plan provides a strategic roadmap for making decisions about promoting KM competencies in the people, processes, and technical design of the USACE enterprise. This plan suggests specific corporate KM goals.

USACE KM Program implementation strategies will be guided by principles that represent lessons learned from leading private and public sector organizations that have successfully implemented KM.

USACE Knowledge Management Strategic Plan

INTRODUCTION

The Purpose

The purpose of the USACE Knowledge Management (KM) Strategic Plan is to establish the framework for implementing a formal, integrated KM Program for the U.S. Army Corps of Engineers (USACE). This plan provides a strategic roadmap for making decisions about promoting KM competencies in the people, processes, and technical design of the USACE enterprise.

This plan:

- Discusses functional and technical guidelines that will assist business areas design and successfully execute KM initiatives consistent with the USACE KM Program;
- Describes essential components needed for building a successful USACE KM Program; and,
- Suggests specific corporate KM goals.

What is Knowledge Management?

KM is a way of putting information, communities, processes, and tools together to allow people to do better work and make better decisions. KM is not simply providing access to automated information systems, electronic libraries, web pages, or chat rooms. In a very general sense, KM means having the right knowledge in the right place at the right time. And KM is first and foremost about learning – what should be learned, when should it be learned, and who should be learning it. How these things are done is where the *management* part comes in.¹

More formally defined, KM is an integrated, systematic approach to identifying, managing, and sharing all of an enterprise's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual workers.²

KM provides the Corps with an avenue to foster development of its **core competencies**. Fundamentally, KM makes the collective information and experience of an enterprise available to the individual knowledge worker, who is responsible for using it wisely and for replenishing

¹ Dove, Rick. "Managing the Knowledge Portfolio," *Automotive Manufacturing & Production*, Gardner Publications, April 1999.

² Army Knowledge Online Strategic Plan, Version 2.0, United States Department of the Army, 11 Dec 1998.

the stock. This ongoing cycle encourages a learning organization, stimulates collaboration, and empowers people to continually enhance the way they perform work. Knowledge management is about organizational agility and flexibility. KM is about change in how we work, learn, and make decisions.

The essence of KM is built on intellectual capital, which includes *human capital*, *social capital*, and *corporate capital*.³

The Corps' vision for KM is to create a performance support environment with the tools and business processes necessary for Corps' individuals, teams, and communities to optimize the effective application of intellectual capital to achieve organizational objectives



³ Bennet, Alex. "Knowledge Management: Unlocking the Potential of Our Intellectual Capital," *CHIPS*, United States Navy, January 2000.

Background

In October 1997, USACE embarked on a rigorous Scenario-Based Strategic Planning (SBSP) process that looked forward twenty years. The SBSP process generated the building blocks of information on which USACE leadership will base decisions on future business-change initiatives. These building blocks include trends, uncertainties, scenarios, strategic segmentation of business activities, industry analysis, our USACE core competencies, and future key success factors. KM was identified as one of the eighteen key success factors (KSFs) essential for the future Corps.

The SBSP process concluded that KM is required not only for the Corps to remain competitive and versatile, but to aim the Corps for business success in several future world scenarios. Based on the SBSP work, the Chief of Engineers established the USACE Strategic Management Board (SMB) to oversee the corporate strategic management processes – including overseeing implementation of initiatives based on the original KSFs. The SMB integrated these KSFs into specific focus areas, with one of those areas being “Knowledge/Technology Management.” Initially, USACE’s R&D community supported the SMB in the Knowledge/Technology Management focus area. During fiscal year (FY) 2000, responsibility for fostering the USACE KM Program was transferred to USACE’s Chief Information Officer (CIO).

The Business Case for Knowledge Management

The Corps is an organization in the midst of change – change that is necessary to posture for the business and global realities of the new millennium. The future success of this organization will require agility and flexibility to sustain us as the world’s premier public engineering organization – trained and ready to provide support *anytime, anyplace*. In 1999, our demographics placed the average Corps permanent civilian employee at 46 years of age and with 18 years of service.⁴ This “graying” of the permanent government workforce, combined with continued federal government downsizing and the push for operating in a virtual workplace to reduce overhead costs, has significant challenges for sustaining the Corps performance and engineering services delivery capabilities.

Organizations in both the government and private sectors undertake formal KM programs to leverage and “mine” in-house expertise – particularly in organizations that are large, geographically dispersed, and have complexity in both its customer service bases and product delivery systems. The Corps matches this profile.

KM represents a significant investment for the enterprise. As such, KM should be applied to business areas that will yield *best value*. Business reasons for formally pursuing KM initiatives can be grouped into three broad categories⁵:

- Customer Intimacy (customer & market shared information)
- Product-to-Market Excellence (new product development); and,
- Operational Excellence (speed & performance in business practices; cost reductions, increased productivity, working across organizational boundaries).

“Organizations will no longer have a permanent workforce, or even a temporary workforce, instead they will have what I call a “situational workforce.” Needed work will be done by a blend of core employees in cross-functional teams and by temporary employees, consultants, and contractors, as necessary.

Full-time, lifelong jobs and job descriptions are already disappearing, and instead, employees are increasingly being called upon to be generalists – omnivores in the new world order, with the tools to survive and flourish at many different tasks and in many different environments. Fewer jobs will fit into a neat job description. And our core government employees will be called upon to perform one role today and another tomorrow. Obviously, this has significant implications for how skills are valued, how salaries are set, how performance is evaluated, and how learning needs are assessed and met.”

Janice Lachance,
Director, Office of Personnel Management

⁴ U.S. Army Corps of Engineers Workforce Profile & Analysis, (Draft) February 1999.

⁵ Cho, George, LTC, U.S. Air Force; LTC Hans J. Jerrell, U.S. Air Force; and CAPT William E. Landay III, U.S. Navy. Program Management 2000: Know the Way, Defense Systems Management College Press, January 2000.

The KM Files: A View from My Work Space ⁶

This is my first job after college working as a professional engineer. Part of the reason I accepted this position with the Corps is that I want to build my competencies in addressing socioeconomic issues surrounding large, complex ecosystems. I recently went through a competitive process to get approved for a position with one of the Corps' formally recognized virtual teams. Our job is to focus on watershed management work at regional, national, and international levels. I have a "home-based" supervisor who acts as my mentor in terms of my engineering discipline specialty. Over the course of this past year, I have also worked assignments for two Project Managers, one located in the North Atlantic Division Regional Business Center, and the other, working with a South Atlantic Division assigned project. As bosses, these PM's are given the opportunity to input into my rating process –a performance measurement of sorts.

One of the reasons I wanted a position with the national virtual ecosystems team is because it represents a highly innovative way of working and addressing technical issues. Junior team members are in a different pay band than our more senior experts. We have very collegial, but professionally competitive relationships. Among the personal characteristics each of us have been evaluated on for team selection are our ability to work, communicate, and contribute within the team environment. In terms of awards and bonuses, this teaming ability is as important a consideration as our technical competency, and we have all agreed to the 360° performance evaluation process.

We're allowed a lot of latitude to experiment with our work situation. Our interdisciplinary team, with membership across the Corps, meets physically face-to-face twice a year for program updating and team-building exercises. We are recognized as a specific community of practitioners in terms of how we collaborate, gather, share our expertise, and generate products. Each of us has been assigned an individual labor charge code, with our financial, project management, and payroll systems having the capability to work behind the scene in authenticating and costing to the appropriate work items across the Corps.

My access to fellow team members, and virtually "the world," is through the Ecosystems Web Portal. This portal keeps learning my personal interests and adjusting as I vary my search patterns and e-mail traffic! Because my current planning responsibilities depend heavily on tracking environmental legislation and local community concerns, every morning my personal search agent has, waiting for me after log on and a cup of coffee, key items from several on-line national news services. My colleague John's face now appears in a window on my screen, checking in with me about a 10:00 a.m. collaboration session to red-line and update part of a deliverable due to the PM this afternoon. Something that popped up in a news service article needs to be included in our rewrite. Through the Corps' electronic libraries and information repository mapping, I was quickly able to identify technical specs and lessons learned from a fellow team member doing a similar project in the Seattle District. This will save valuable time in our 10:00 session.

In the afternoon, seven of our team electronically connected with the PM who was conducting an IPR with our customer at the job-site. Changes made during our morning revision session were important to the PM's discussion and virtual walk-through of the results from the watershed modeling tool. The customer was very happy with the walk-through and even more delighted to learn that this and other modeling tools could be used interactively on the web by her and others, including state and local government decision makers.

The PM scheduled a follow-up meeting with the customer to demonstrate other capabilities of the watershed modeling tools including (1) the ability to prepare and present model results in real time, (2) the ability to determine through a search engine what models (engineering, ecological, hydrology, social, economic) are appropriate for use in the study, (3) the ability to access models and databases on non-Corps systems and run, if necessary, the models on super computers, (4) the ability to feed the output from one model to another as input on a real time basis, (5) the ability for the public and sponsors to identify and evaluate alternatives through interactive computer based means, and (6) easy access to historical data, maps, demographics, etc.

⁶ The KM Files are vignettes that have been used throughout this strategic plan to illustrate the potential application of KM principles to Corps business areas.

THE USACE KNOWLEDGE MANAGEMENT PROGRAM

KM is a tool to support an organization's strategic business plan. More specifically, the Corps organizational effectiveness depends, in large measure, upon the creation and maintenance of knowledge bases; the ability to attract, train, and retain a highly skilled work force proficient in utilizing these knowledge bases; and the development of core business processes designed to capitalize upon these knowledge assets.

The Three Dimensions of the USACE KM Program

For success, the USACE KM Program must be attentive to three dimensions: people, content, and technology.

People: Those who produce and use knowledge as a basis for making actionable decisions.

Content: The data, information, and knowledge important to the organization including processes and procedures.

Technology: The technical infrastructure and tools that enable the capture, storage, and delivery of content to those who need it when they need it.



For a successful KM program, each proposed initiative must include a strategic blend of these three elements and, *most importantly*, the application of KM to business areas that will yield best value and have highest benefits realization.

The People Dimension

The USACE KM Program could literally touch most of the Corps workforce. For an integrated KM program, there are important roles and responsibilities included in the people dimension.

Knowledge Communities. A Knowledge Community (KC) represents those working on a common set of activities or mission, e.g., Installation Support, Emergency Management, Project Management, etc. Communities of practice are communities that form within an organization where people assume roles based on their abilities and skills instead of titles and hierarchical stature. Communities of practice may cross several mission areas. An individual may be involved in several different communities as a member of different teams and projects.

Librarians should be included on teams considering KM initiatives because of their skills with information resource location and categorization. Historians and records managers should be included because of their knowledge of the importance of historical and archival information.

Members of each designated Knowledge Community have the following roles and responsibilities:

- Identify functional and operational requirements where KM may be useful and shared.
- Build and maintain knowledge content in KM systems –this includes designation of “Content Manager” roles.
- Promote the use of KM tools among peers.
- Continuously improve individual KM skills and abilities.
- Incorporate KM practices into all work process.

Incentives. Introducing KM practices and tools into any organization often requires cultural change, for example, from a “knowledge is power” mentality to a knowledge *sharing* culture. Without motivating factors it is difficult to get people to change the way they work. There is a “fear factor” where employees fear that their knowledge will be taken and they will then be downsized. Change is widely accepted when there is a reward for accepting the transition and moving the focus toward the future state. Both monetary and non-monetary rewards reinforce the desired culture an organization is trying to adopt. When developing a KM change strategy based on reward and reinforcement, it is important to develop a positive atmosphere in which team members understand and commit to organizational KM goals and values.

“Knowledge management is about ... creative jamming ... about connecting individuals better, high performance teaming, growing communities of practice and knowledge networks.”

IBM on its internal Knowledge Management Program

Marketing and Training. In addition to rewards and incentives, both marketing and training need to play an important part of a change management process for KM. Training programs should include courses minimally consisting of a basic orientation program for KM, community-of-interest-specific training materials, on-line tutorials and formal and informal training related to specific processes and tools that KM practitioners will use. Marketing implies getting the KM word out through a variety of media.

KM Organizational and Governance Structures. KM roles and responsibilities can range from informal to highly formalized approaches. For success, the KM roles and responsibilities described in Appendix A must be addressed. In most instances, oversight assignments can be treated as collateral duties. However, responsibilities, e.g., KM content management, tool development, portal maintenance, KM training, marketing, etc., should be assigned as a formal duty and/or by agreement to a specific organization and/or functional business sponsor.

Each member of a community has a role in contributing knowledge to a knowledge base. There is also a role for senior members of the community to validate that knowledge.

KM will be institutionalized throughout USACE by a virtual organization -- a logical one whose purpose is to foster the growth and expansion of an autonomous network that improves USACE’s ability to “know what it knows, harness and coordinate what it knows, and learn

something new.” Analogous to a biological system, this virtual organization grows and adapts according to its environment, weeding out efforts and capabilities that are not productive, while reinforcing and enhancing those initiatives which demonstrate value. This weeding will require a continuing effort. KM is a journey, not a destination.

Enhancing human and social capital are important parts of the people dimension.

Human capital accounts for the majority of the Corps’ intellectual capital, or the *tacit* knowledge that is resident within the mind of each Corps employee, *as well as* the future capacity and potential for learning that we each have. Tacit knowledge includes the skills, experience, insight, intuition, and judgment shaped by the past and present. An equally important Corps asset is our potential.

Social capital is the intellectual capital resulting from communications, collaboration and interpersonal relationships. It includes human and virtual networks, relationships and the interactions across these networks built on those relationships.

The Content Dimension

Content is the data, information, and knowledge important to the organization including processes and procedures. Content includes both structured and unstructured information such as databases, subscriptions, web pages, news feeds, e-mail, documents, memos, Portable Document Format (PDF) files, briefings, spreadsheets, audio, video, bookmarks, shared local-area network (LAN) directories, forms, geographic information system (GIS) data, chat room transcripts, project schedules, sensing data, product catalogs, regulations, computer-aided design and drafting (CADD) drawings, photographs, graphics, etc. Scientific data such as models will be important within the Corps.

Content resides both inside and outside the enterprise. Every community is not interested in all content. To become knowledge worth managing, content must include context. Content is managed as part of a knowledge cycle – create, capture, organize, access, and use. Great quantities of content must be managed to reduce information overload. Records management professionals play a role in determining when information can be archived.

An organization, or its communities, cannot manage knowledge without knowing what knowledge they have. A knowledge map (K-map) helps identify and categorize an organization’s content. A K-map integrates enterprise-specific terminology, information needs and priorities into a taxonomy that acts as a guide to the conceptual and physical organization of information resources, e.g., experts, data, information and processes.

A knowledge audit is an analysis technique that is used to create a knowledge map. It is the process of conducting a survey to determine what knowledge an enterprise has. The knowledge audit helps the enterprise establish a common vocabulary that is required for effective communication and collaboration.

Some of the items that could be used to begin a K-map of the Corps include: the CorpsWeb catalog, (<http://corpsinfo.usace.army.mil/>); Search engine of Corps Internet sites (<http://160.149.176.110/siteserver/search/> Center for Army Lessons Learned); Corps information repositories (<http://www.usace.army.mil/ice/references/repositories.html>); library catalogs; PIRS Project Information Retrieval System (<http://pirs.mvr.usace.army.mil/>); PPDS (<http://ppdsintra-w.usace.army.mil/ppds/home/>). The content included in electronic document management systems is also an important dimension.

All members of a community must be involved in identifying the knowledge sources which are important in doing their jobs, so that a synergistic effect, building on each workers knowledge can be attained.

Corporate capital is part of the content dimension.

Corporate capital includes intellectual property such as patents, ideas, etc. It also includes functional and organizational processes, as well as tangible information resources, such as the data and information captured in databases, documents, lessons-learned systems, etc. -- all of which have been made explicit.

The KM Files: Knowledge Management: Technology Transfer

The Directorate of Public Works (DPW) at Fort Swampy receives complaints about a leaky roof following a recent storm. Interested in solving the leaky roof problem, the DPW does a search of the USACE Technology Portal by typing in "leaky roofs". A roofing diagnostic tool comes up on the screen. The system asks the DPW to select from a pick list of the type of roof and asks some basic questions about the roof design and particulars of the leak problem. An expert system identifies several possible causes and locations for the leak based on a historical analysis and lessons learned from similar roof types in the Army and private sector. The system automatically brings up links to several resources to support the continued investigation and solution of the problem. These resources include a variety of leak detection systems, repair options with specifications and vendor listings, a proposed maintenance management program, and a design tool for specifying and designing a new roof.

The DPW decides to look at the leak detection options in order to pinpoint the source of the leak. Clicking on each option provides a one-page, illustrated description of the device. Links on the page take the DPW to a chat room where discussions on the use of the device have been recorded; a short video showing the actual use of the device; a listing of lab, District, and installation personnel who have used the device and could be consulted or hired to assist in its implementation; specifications for procuring the device, and vendor web sites. The DPW learns Fort Worth District has a task order contract to provide leak detection surveys using one particular, infrared inspection technology that would work very well in the cooler climate at Fort Swampy. A sample scope of work is downloaded and the DPW modifies the sample to reflect his particular inspection needs. The revised scope of work is sent electronically to the designated point of contact at Fort Worth District for review and to begin the dialogue to obtain the leak inspection support.

The Technology Dimension

Today's web-centric environment and the geographical dispersion of the Corps workforce leads to the assumption that the majority of Corps KM practitioners will be operating within an electronic, computer-based environment and making intellectual contributions through electronic repositories. This section discusses, in general terms, some of the technology that supports KM.

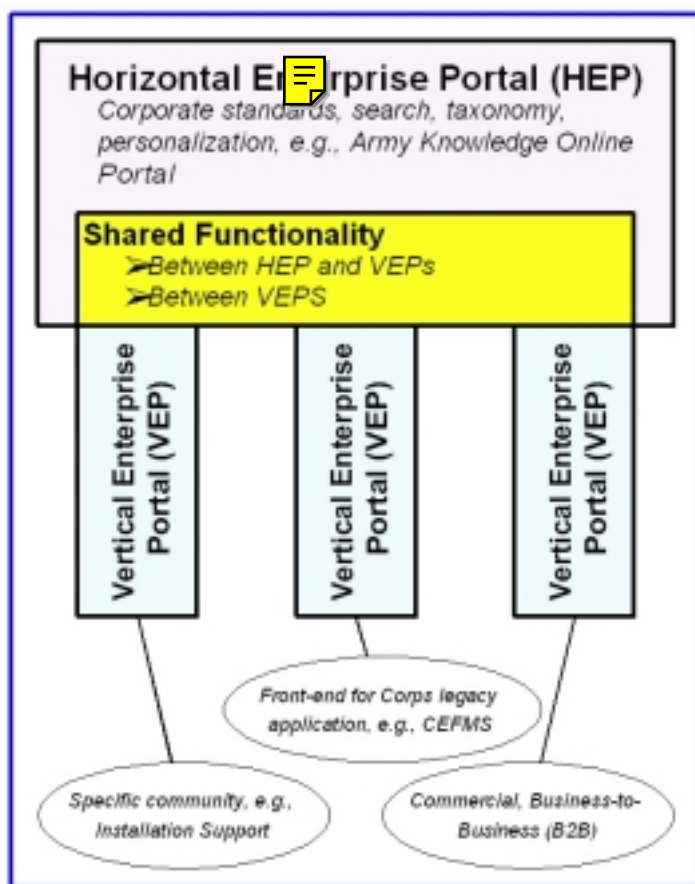
KM requires a blend of technologies. The following list shows KM requirement areas for which commercial-off-the-shelf technology is readily available. Each initiative need not address all of these functional requirements. Having the tools without the process for how the community will use the tools will not lead to effective KM practices.

Checklist of KM Technology Requirements⁷

1. Capture and store
2. Search and retrieve
3. Send critical information to individuals or groups
4. Structure and navigate
5. Share and collaborate
6. Synthesize
7. Profile and personalize security/permissions
8. Solve or recommend
9. Integration with existing business applications
10. Maintenance

In general terms, the Corps information technology (IT) infrastructure is robust enough to support collaboration and initial KM pilot projects throughout the enterprise. In support of the KM Strategic Focus Area, a data call was conducted through the USACE Information Management channels in January 1999 to gather baseline information regarding IT infrastructure availability to accommodate KM initiatives. Available capabilities include: enterprise wide Internet/Intranet accessibility; CorpsWeb information resources; Microsoft Exchange as a corporate standard, NetMeeting, and public shared folder capabilities; X.500 directories services; collaborative discussion tools; search engine capabilities; and electronic meeting capabilities. Additional IT capability requirements for any specific KM community would build on this enterprise baseline. In addition, the Headquarters, Department of the Army, Knowledge Online (AKO) Program offers universal mail and directory services, as well as collaborative tool capabilities that can be used by the Corps.

⁷ GartnerGroup Commentary, 28 April 1999.



A portal is one of the main tools used to institutionalize KM. There are many types of portals. Examples include vertical enterprise portals (VEPs) and horizontal enterprise portals (HEPs). Portals are also characterized by who uses them, e.g. customers, internal users, business partners.

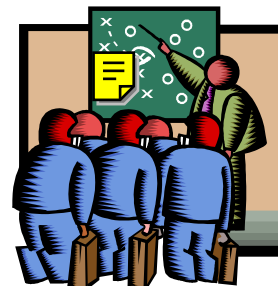
Horizontal enterprise portals (HEPs) provide broad access to many types of repositories and generic application-integration features. Enterprises may have more than one VEP, as different business areas or applications begin using a VEP. It is important that organizations have only one HEP. The existence of multiple HEPs will cause problems for portal users inside and outside the organization. If each portal handles security, directory, profiling, taxonomy, application integration, content aggregation and publishing differently, then a single enterprise will

be forced to train its users and support staff in multiple methods, processes, and tools. GartnerGroup recommends that enterprises should embrace multiple VEPs, architecting the solutions to provide seamless access. Conversely, enterprises should aggressively avoid multiple HEPs until portal interoperability standards emerge.⁸

Because communities must work together, and because people may be involved in several communities at once, KM tools must be based on interoperable standards.

It is important to the overall success of the USACE KM program that a common user interface that provides useful navigation and taxonomy tools to Corps resources is adopted. The overall structure of an enterprise knowledge map needs to be defined before specific communities of interest are added -- defining the overall geography precedes defining specifics of each road or city! Broad communities of interest, as well as specific organizational elements, can share access to resources through such an enterprise knowledge map.

⁸ GartnerGroup Research Note, 3 April 2000.



Knowledge Management Goals.

The following are strategic goals for the USACE KM Program:

General/People

- Manage KM implementation as a critical corporate strategic initiative.
- Change the way business is conducted and decisions are made to encourage KM practices throughout the organization.
- Establish a Chief Knowledge Officer (CKO) position for the Corps.
- Establish a small, focused KM integration team that works with Corps knowledge communities to facilitate initiatives and identify integration opportunities.
- Resource a strategic budget for USACE KM Program activities in the Program Objective Memorandum (POM), or other corporate funding processes.
- Develop a corporate KM tactical implementation plan, and approach individual KM initiatives in a consistent, programmatic manner.
- Measure USACE KM Program performance.

Content

- Create a USACE knowledge map to identify the Corps' intellectual capital.
- Create business rules and procedures for cataloging and managing information.
- Promote integration opportunities and information resource sharing among individual knowledge community K-maps.
- Encourage Vertical Enterprise Portals (VEPS) for individual knowledge communities.
- Leverage KM as the primary technical integration tool to promote the Program and Project Management Business Process (PMBP), as the Corps overarching business process.
- Emphasize KM initiatives that will accelerate Corps migration to virtual teaming techniques and strengthen the emerging Regional Business Centers (RBC).

Technology

- Identify tools and standards for creating a horizontal enterprise portal (HEP).
- Prototype HEP capabilities as part of a process for identifying common tools and standards.
- Provide robust search capability for existing USACE Internet and Intranet content and information/data base resources that returns relevant personalized results.
- Leverage Army Knowledge Online (AKO) tool capability and installed Corps technology infrastructure where practicable.

Guiding Principles

USACE KM Program implementation will be guided by principles that represent lessons learned from leading private and public sector organizations that have successfully implemented KM:

Focus on key business needs—KM initiatives should be targeted to improve organizational performance in *key* processes or otherwise have impact on key business outcomes. If the focus is on less important areas, KM initiatives will not sustain the necessary support of executives and line workers. The success of KM depends on interested people!

Begin with pilot projects—The way to build credibility and support for KM is to begin with projects that can be fielded and show results within 6 to 12 months. Longer efforts risk loss of attention by key sponsors and workers. Pilot projects scoped for manageable success in the near-term are best. This approach builds momentum to expand pilots and to address other business areas. The USACE KM Program will build on a *strategy of breadth*, e.g., several pilots at different organizational levels, rather than depth within one particular community of interest.

Start with the basics—Begin with projects designed to facilitate greater collaboration among workers who now form a community of interest (COI) or practice. Leverage existing community cohesion to create KM capabilities that increase collaboration and expand the community. Develop selected libraries of knowledge content to meet needs as identified by the workers. Introduce more complex business processes, designs, and sophisticated technologies only when the community is ready.

Use rapid prototyping—Utilize rapid prototyping methods to field improved products to user communities.. The prototyping involves quickly implementing a COTS product within a community, and using lessons learned for the next community.

Achieve a balanced strategy—Develop an enterprise-wide strategy that decentralizes, to the maximum extent, development and resourcing of a KM program. However, it should also be recognized that centralization is also required in areas such as standards, enterprise knowledge architecture, common tools, and templates.

Use the formal organization—Divide the enterprise into recognized communities, typically along formal functional organization lines at first, to begin decentralized design and implementation. This usually promotes acceptance. Foster cross-functional community formation as it emerges; avoid trying to force community development in a vacuum.

Create a KM governance structure—Establish a governance structure to assure integration and planned growth of KM initiatives enterprise-wide. Such a structure would also be an important resource advocate, in partnership with individual knowledge communities. Existing structures such as the Strategic Management Board (SMB) play a critical role in development of a KM Program.

Assess and embrace existing initiatives that support KM —Define criteria for evaluating new or existing USACE KM initiatives as a means of encouraging movement toward higher levels of KM sophistication. Take advantage of and integrate ongoing activities. Many activities that have KM potential exist in the Corps. Rather than list them here, the CIO is establishing a KM website at <http://www.usace.army.mil/ci/km/> to catalog initiatives as they evolve.

Utilize Commercial Technologies —Exploit commercial hardware and software technologies to the fullest extent possible when designing and implementing KM solutions, especially those technologies currently owned or licensed by the Corps. No KM activity will be implemented without consideration given to commercial, off-the-shelf (COTS) alternatives.

Integrate USACE KM Initiatives —To enhance accessibility and interoperability of USACE KM systems, it is essential to consider integration on various levels, e.g., technology tools, database and repository sharing, etc.

Steps to Bringing a KM Initiative Online

- Audit candidate knowledge area to scope collaboration and information requirements within a specific community of interest or community of practitioners
- Assign KM project management responsibilities
- Assign KM content management responsibilities
- Define the particular KM content initiative(s) and deliverables that result from the knowledge audit
- Define tool and technology requirements
- Define KM initiative performance measurements
- Perform KM initiative design, build, and test functions
- Launch KM initiative, e.g., marketing, training, news- letters, etc.
- Perform maintenance functions, e.g., performance evaluations, user feedback, content quality control, cleansing and archiving, editorial updates, technical architecture reviews, etc.
- Share with other knowledge communities the lessons-learned about implementing KM initiatives.
- Continue to use the KM initiative.

The KM Files: Chronicle of a Headquarters Manager

As a senior manager at Headquarters, I am responsible for monitoring the performance of the Corps across several business areas. This task was very tedious until I began using the new Knowledge Management Portal that supports the Balanced Scorecard process.

In the past, I attended quarterly reviews as a snapshot of various business areas. Now, I can monitor the performance indicators at any convenient time. I personalized the Knowledge Management Portal on my desktop to give me a direct feed of information on every program I monitor. Previously, the quarterly reviews were prepared with data that was several weeks old, and that used various definitions and data interpretations across the Corps. Now, the data is always up to date and consistent Corps-wide.

The other senior leaders no longer need to travel to the quarterly reviews; reviews are conducted remotely. Historical data and trends can be followed graphically and interactively. If there is a specific issue with a project requiring visual inspection, we can view the project site remotely and see the issue, and discuss it online. The CADD drawings, lessons learned databases, scheduling data and other relevant information can be used during the review.

Each leader is automatically alerted in their portal screen whenever key parameters change, but they are not overwhelmed with details. They can easily drill down to get the details, if necessary. We can focus on the big picture and plan for the future because we don't have to spend extra time finding out what is happening in the present.

Knowing When You Get There - Metrics

KM is about “person-to-person” knowledge sharing. As such, development of performance measures for KM initiatives is extremely difficult, and has been referred to as “every practitioner’s Achilles heel.”⁹ Most organizations today rely on anecdotal evidence and ‘gut feeling’ to justify their internal KM investments. In reality, few companies have collected any type of measures. A recent study found that only 20% of KM programs have used some form of formal metrics on how business performance is influenced.

In the initial phases of USACE KM Program implementation, anecdotal evidence of time and cost savings may be the most appropriate measurement for any specific KM initiative. However, as the USACE KM Program matures, formal metrics are recommended. Examples of KM performance measurements are discussed in Appendix B. Progress of the overall Corps KM Program should also be measured.

⁹ Shand, Dawne. “Return on Knowledge,” *Knowledge Management*, 2(4), April 1999:32-39.

Risks and Assumptions

There are several factors that could influence the overall success of a USACE KM program implementation.

| Factors that Influence Corps KM Program Implementation | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strengths and Opportunities | Weaknesses and Threats |
| <ul style="list-style-type: none">• General organizational agreement of enterprise core competencies and high-return business areas.• USACE Strategic Management Board (SMB) ability to influence business process change at the enterprise level.• Existing “centers of expertise” throughout USACE as integral support to knowledge communities.• Leveraging KM initiatives to promote “Regional Business Center (RBC)” concepts.• Leveraging KM initiatives to promote the Chief’s strategic initiatives.• Command Management Reviews (CMR) and/or Board of Directors (BOD) meetings as the avenue to provide feedback on USACE KM Program progress. | <ul style="list-style-type: none">• No “line item” funding or advocacy for enterprise-wide KM initiatives.• Limited “line item” funding in specific community of interest/practitioner areas to sustain KM content development.• Culture of independence and regionalization.• Steep “graying” and retirement trends facing the Corps with no framework or proactive approach to capture tacit institutional memory, wisdom, as well as lessons learned, particularly in engineering/construction life cycle expertise.• Difficulty of measuring KM resource investments against performance results.• Failure to seat responsibility of the overall USACE KM Program within a senior USACE staff mentor.• Failure to assigned KM content management responsibilities as formal responsibilities.• Failure to reward Corps team members for knowledge sharing and collaborative work behaviors.• Treating KM as a stovepipe or technology only initiative |

Implementing the KM Program

“Knowledge is like money: To be of value it must circulate,
and in circulating it can increase in quantity and, hopefully, in value.”
– Louis L’Amour

In summary, KM strategic goals cannot be realized by default, or in an ad hoc manner. Key success factors for implementing a KM Program within the Corps include:

- Advocacy of formal KM practices, techniques, and business process change at the senior executive level.
- Assigning formal KM roles and responsibilities to people who have talents as change agents.
- Aligning KM initiatives, including allocating adequate resources, to best promote the strategic business direction of the organization.
- Working with pilot KM projects that can show results within 6 to 12 months and measuring specific progress.
- Working with an enterprise implementation plan that encourages integration, sharing of resources, and adoption of common technology tools sets and standards across communities of interest.
- Recognizing and rewarding community of interest members who collaborate and contribute to the enterprise knowledge base.

Appendix A: USACE KM Program Organizational and Governance Structures

Assignment of roles and responsibilities is critical to institutionalizing KM within the Corps. The following are recommended organizational and governance structures. In most instances, oversight and management assignments can be treated as collateral duties. However, responsibilities, e.g., KM content management, tool development, portal maintenance, training, and marketing, etc., should be assigned as a formal duty and/or by agreement to a specific organization and/or functional business sponsor.

The Headquarters, USACE Corporate Information Officer (CIO) presently serves as the Functional proponent for the USACE KM Program. Establishment of a Chief Knowledge Officer (CKO) would shift FP responsibilities from the CIO to the CKO. The CKO role is different from the CIO role, in that the CIO role is focused on information technology (IT). The CKO is an educator and an advocate of KM.

Chief Knowledge Officer (CKO)

The CKO has the following roles and responsibilities:

- Develop USACE KM policy, guidelines, and standards, with input from the Knowledge Community Functional Proponents and other members of knowledge communities.
- Develop an advocacy for KM throughout the Corps to help ensure availability of resources.
- Develop common definitions to help facilitate understanding of KM concepts throughout the Corps.
- Serve as a liaison between USACE knowledge communities, promoting education and awareness of KM throughout USACE.
- Promote a culture that will facilitate knowledge sharing and organizational learning.
- Develop incentives to encourage knowledge sharing.
- Establish the criteria, metrics and the process by which proposed or existing Corps' KM processes and tools can be evaluated against industry standards.
- Develop a strategy to facilitate KM training and education throughout the Corps.
- Act as liaison to Army Knowledge Online, Federal agencies and industry partners to facilitate the sharing of good KM practices.
- Lead the development of a USACE corporate knowledge map.

- Maintain a corporate KM website for publishing pertinent information about the USACE KM Program, describing the Corps inventory of KM tools across all knowledge communities, delivering KM software applications to Corps employees, etc.
- Form ad hoc KM advisory groups as needed.
- Develop the USACE enterprise KM program budget.
- Develop and maintains the USACE KM Strategic Plan and the KM Implementation Plan.
- Oversee allocation and accountability of funds for different KM projects.
- Coordinate KM project requirements and actions.
- Monitor the progress of USACE KM initiatives.
- Investigate and resolve conflicting KM project issues within and between knowledge communities.
- Serve as an executive liaison to Army Knowledge Online (AKO).

Chief Information Officer (CIO)

The USACE CIO would have the following roles and responsibilities:

- Create a Corps-wide information infrastructure to facilitate KM.
- Provide technical leadership for the USACE KM Program.
- Set technical standards for KM system usability, scalability, flexibility, and interoperability.
- Oversee the development and maintenance of the USACE horizontal enterprise portal (HEP).
- Explore enterprise-wide licensing opportunities for KM tools.

Knowledge Community Functional Proponent (FP)

There will be multiple Knowledge Community (KC) Functional Proponents under the USACE KM Program. A KC Functional Proponent will typically be a Headquarters, USACE staff element or Center of Expertise based on the particular business area and processes being addressed.

A KC Functional Proponent will typically have the following roles and responsibilities:

- Identify and prioritize functional requirements for KM projects within their business area.
- Determine resources needed for successful implementation of KM initiatives within their business area.

- Inform the CIO and CKO about planned KM initiatives within their business area and investigate the appropriateness of leveraging existing KM solutions.
- Manage the development and implementation of KM initiatives specific to their business area.
- Execute KM implementation within their knowledge community.
- Facilitate collaborative discussions within their knowledge community.
- Collaborate with other KC Functional Proponents to share knowledge and technical solutions, and to foster cross-functional KM capabilities.
- Oversee the definition and delivery of knowledge content for their business areas to the USACE KM environment.
- Define access privileges to their knowledge resources.
- Develop, maintain and generally oversee any vertical enterprise portals (VEPs) associated with their business area.

Knowledge Content Specialists

The demand for immediate access to relevant knowledge has given rise to a new business role – the Knowledge Content Specialist, or *infomediary* as this role is sometimes referred to.¹⁰ For most KM initiatives, it is recommended that one or more persons be designated as a knowledge content specialist to help ensure success.

Knowledge content specialists may bear any range of titles and may not be formally designated on any organization chart. What matters is what they do, primarily creating or managing systems to connect employees with the knowledge they need. These specialists should know what the organization does, where knowledge resides within it, and in what forms that knowledge may be valuable. They need to have strong skills in the business process and its knowledge resources, as well as skill in organizing and filtering knowledge into highly accessible and usable form.

Knowledge content specialists may be categorized in three ways: *knowledge stewards*, *knowledge brokers* and *knowledge researchers*. By understanding these three types of specialists, Corps agencies and knowledge communities can best identify the appropriate specialist for a given KM challenge.

Knowledge stewards will typically perform the following activities:

- Collect, analyze, and organize tacit knowledge held by individuals within an organization or knowledge community.
- Watch what people do and interview individuals to uncover and translate tacit knowledge into explicit knowledge.
- Refine knowledge content from the originating owner into a specific format or product that other knowledge users require.

¹⁰ Costello, Daniel. "For Knowledge, Look Within," *Knowledge Management*, September 2000.

- Maintain knowledge maps for their particular business area.
- Maintain links to information resources.
- Develop “best practices” stories from which others can learn.
- Market the value of knowledge sharing.
- Encourage everyone to contribute information and utilize KM systems.
- Help make sure that the content in KM systems stays current and relevant.

Knowledge brokers have a more direct connection to knowledge seekers and project teams. They typically perform the following activities:

- Establish connections between individuals to achieve the transfer of tacit knowledge one-to-one, i.e., connect individuals so they learn from each other.
- Facilitate information sharing to accomplish specific business goals.
- Work with project teams throughout a project’s life-cycle to help identify skills that a team may have or need to launch a new project, and ensure that knowledge is captured from a project team and deposited in a knowledge repository.

Knowledge researchers deal primarily with information and knowledge external to their own organization or knowledge community. Knowledge researchers typically perform the following activities:

- Search for, retrieve, and deliver explicit knowledge residing primarily outside the business.
- Build knowledge maps or taxonomies, to classify external information and knowledge deemed important.
- Helps knowledge workers figure out what knowledge they might *need*, not necessarily just what is *asked* for.

Librarians are important resources for these content roles, but members of specific communities or teams must also develop the skills needed for these roles. Pagemasters of existing CorpsWeb pages may have a sense of what information is available and how to link it together. Historians and records managers who are trained in the importance of historical and archival information have a role here as well.

Appendix B: Suggested Performance Measurements for a KM Initiative

These performance measurements are suggestions that will not apply to every KM initiative; however, every initiative should have some measurement.

From the Army Knowledge Online (AKO) Plan

- A. Cost avoidance measures
- B. Operational measures specific to pilot projects
 - Content growth
 - Knowledge community growth
 - Usage of web pages and download
 - Collaboration via KMtools
- C. Process measures
 - Knowledge community members can be surveyed about the utility of specific KM initiatives to their work and the helpfulness of collaboration through electronic discussion groups.
 - Qualitative perception of cycle time reductions will be useful.

From the USACE KM Focus Team

- A. Strategic Business Measures:
 - 1. Knowledge Sharing and Expertise Retention
 - Periodic electronic surveys of targeted KM tools/data repository resources, measuring such dimensions as tool usefulness and availability, frequency of use, growth and quality of content contributions, etc.
 - Spot check review of community of interest employee performance standards and organization award allocations related to supporting KMactivities.
 - 2. Efficiencies in Problem Solving
 - Surveys to establish a baseline of meeting customer requirements *prior* to KM implementation. Baseline consists of measurements such as cycle time to respond, activity based costing (ABC), etc.
 - Surveys to measure reductions in meeting customer requirements *after* KM implementation. Measurements could include time and cost reductions, as examples.
 - 3. Customer Satisfaction

Periodic customer satisfaction surveys will be conducted to determine whether customer satisfaction has increased.

- “Green” = 75% or more are very satisfied and see definite business process improvements
- “Amber” = 51% - 74% are satisfied and see some business process improvements
- “Red” = 50% or less are not satisfied with results of using products associated with the KM initiative or see little to no business process improvement.

4. Workload and Customer Base

- Surveys to establish a baseline of present workload by a particular customer base in terms of number of projects, dollar value, etc.
- Surveys to measure growth of workloads in a particular customer base.

B. Operational Measures:

1. KM Project Management

- A project management plan (PMP), with sub-tasks, milestones, and resource requirements will be defined for each KM “community of interest” initiative.
- The PMP will serve as the baseline for measuring *implementation progress* of each specific KM prototype.
- Examples of *key* sub-tasks:
 - ✓ Definition of an appropriate knowledge map to tacit knowledge that is both required and codified
 - ✓ Assignment of ownership to specific content types
 - ✓ Emplacement of the supporting technology tools, databases and knowledge repositories
 - ✓ Marketing KM tools and content
 - ✓ Deliver KM tools and train users.
- Project rating examples:
 - ✓ “Green” = exceeding over 85% of established project milestones
 - ✓ “Amber” = exceeding between 50% - 84% of established project milestones
 - ✓ “Red” = 49% or less of established milestones met

2. KM Tool Development

Periodic surveys to track those tool development and expansion activities that have the most relevancy or highest frequency of use to enterprise KM initiatives.

Appendix C: Glossary¹¹

This glossary defines several terms related to KM, many of which have been used in this strategic plan document. Some terms defined here have not been used in this document, but are included as a convenience for the reader as an aid for better understanding KM concepts, tools, and practices.

Activity: A process, function or task that occurs over time and has recognizable results. Activities combine to form business processes.

Algorithm: A formula or set of steps for solving a particular problem. To be an algorithm, a set of rules must be unambiguous and have a clear stopping point. Algorithms can be expressed in any language, from a natural language like English to a programming language like Java.

Analysis: A process of manipulation and accessing data to turn data into knowledge.

Artificial Intelligence: Computer hardware and software packages that try to emulate human intelligence in order to solve problems using reasoning and learning. There are various techniques such as expert systems that have historical roots in Artificial Intelligence.

Balanced Scorecard System: Method of measuring performance of a firm beyond the typical financial measures. Links corporate goals and direct performance measures in a framework specific to a firm, and is one method of measuring the impact of knowledge management.

Baseline: A baseline is the current condition that exists in a situation. It is usually used to differentiate between a current and a future representation.

Best Practice: A best practice is a way or method of accomplishing a business function or process that is considered to be superior to all other known methods. Best practices are identified from lessons learned.

Business Intelligence: Business Intelligence is a popularized, umbrella term introduced by Howard Dresner of the GartnerGroup in 1989 to describe a set of concepts and methods to improve business decision making by using fact-based support systems. The term is sometimes used interchangeably with briefing books and executive information systems.

Business Objectives: Goals of the organization that can be measured in some quantitative way. (e.g. Decrease cost by 15%. Become the supplier with the lowest rate of returned products.)

¹¹ Definitions are merged from several sources including Army Knowledge Online Strategic Plan, Computing Canada, Delphi Group, Decision Support Software, GartnerGroup, KM Forum, Merriam-Webster's Online Collegiate® Dictionary, Profile System EC Glossary, Corpsoft, Wizdom Systems and Netlingo.

Business Process Portal: A process portal focuses on solving a particular business problem or manage a particular business function. Business Process Portals bring the right information to the right people at the right time to help them get their work done. A Business Process Portal is a type of Vertical Portal.

Business Process Reengineering (BPR): A structured approach by all or part of an enterprise to improve the value of its products and services while reducing resource requirements. The transformation of a business process to achieve significant levels of improvement in one or more performance measures relating to fitness for purpose, quality, cycle time, and cost by using the techniques of streamlining and removing added activities and costs.

Collaborative Tools: Tools that enable sharing of knowledge across time and distance. These tools may enable both structured and free-flow sharing of knowledge and best practices. Transcripts of the use of these tools may be incorporated into a knowledge base for future use.

Communities of Interest (COI): COI is a synonym for Communities of Practice.

Communities of Practice (COP): Communities that form within an organization where people assume roles based on their abilities and skills instead of titles and hierarchical stature. A COP may be a group of people with similar interests or expertise, or an affinity group or informal networks and forums, where tips are exchanged and ideas generated. A group of professionals informally bound to one another through exposure to a common class of problems, common pursuit of solutions, and thereby themselves embodying a store of knowledge.

Community: A body of people having common rights, privileges, or interests.

Content: The data, information, and knowledge (including processes and procedures) which are important to the organization.

Content management: Technologies that allow the capture and management of explicit experience. It allows people to capture, codify, and organize experiences and ideas in central repositories. A more general term than data management, content management includes structured and unstructured data.

Content mapping: Identifying and organizing a high-level description of the meaning contained in a collection of electronic documents.

Core Competencies: Core competencies are the complex set of skills, knowledge, and resources that span the organization; yield a sustainable competitive advantage in the marketplace; and, permeate the organization's culture, evolve over time, and are based on specific "know-how." The Corps' core Competencies are: One-Stop Service; Honest Broker; Agility; Problem Solver; Public Policy; Force Multiplier, and Systems Management.

Core Rigidity: Opposite of Core Competency. Defining any Core Competency too narrowly may turn it into a Core Rigidity. Core Rigidities are unquestioned assumptions about an

organization's products, policies, or positioning which lead to complacency and inhibit innovation.

Corporate Knowledge: The collective body of experience and understanding of an organization's processes for managing both planned and unplanned situations.

Corporate Knowledge Management: The process whereby knowledge seekers are linked with knowledge sources and knowledge is transferred.

CorpsWeb: CorpsWeb is the totality of the United States Army Corps of Engineers (USACE) unclassified web presence including Internet, Intranet, and Extranet. (ER 25-1-99)

Customer Capital: The value of an organization's relationships with the people with whom it does business, or the value of its [the companies] franchise, its ongoing relationships with the people or organizations to which it sells.

Data: Set of discrete, objective facts about events. Data is transformed into information by adding value through context, categorization, calculations, corrections, and condensation. Data is facts and figures, without context and interpretation. Data + Context = Information

Data Mining. is the application of nontrivial algorithms to large amounts of data for the purpose for extracting useful data patterns. Data mining tools use a variety of techniques including case-based reasoning, data visualization, fuzzy query and analysis, and neural networks. Case-based reasoning tools provide a means to find records similar to a specified record or records. These tools let the user specify the "similarity" of retrieved records. Data visualization tools let the user easily and quickly view graphical displays of information from different perspectives. Although, the term data mining is sometimes used interchangeably with the term knowledge discovery, it is generally accepted that data mining is one step in the knowledge discovery process.

Data Warehouse: A database designed to support decision making in organizations. It is batch updated and structured for rapid online queries and managerial summaries. Data warehouses contain large amounts of data. A data warehouse is a subject-oriented, integrated, time-variant, nonvolatile collection of data in support of management's decision making process.

Database: A collection of interrelated data, often with controlled redundancy, organized according to a schema to serve one or more applications. A database is generally considered to be structured data

Decision Support Systems (DSS): Interactive computer-based systems intended to help decision makers utilize data and models to identify and solve problems and make decisions. The system must aid a decision-maker in solving unprogrammed, unstructured (or "semi-structured") problems. The system must possess an interactive query facility, with a query language that is easy to learn and use.

Discontinuity of knowledge: A phenomenon that occurs when experienced knowledge workers move from one position to another position (inside or outside of an organization) without having adequate time or KM facilities to transfer their tacit knowledge to coworkers.

Entity: The representation of a set of real or abstract things (people, objects, places, events, ideas, combination of things, etc.) that are recognized as the same type because they share the same characteristics and can participate in the same relationships.

Epistemology: The study of the nature and foundations of knowledge.

Executive Information Systems (EIS): A computerized system intended to provide current and appropriate information to support executive decision making for managers using a networked workstation. The emphasis is on graphical displays and an easy to use interface that present information from the corporate database. They are tools to provide canned reports or briefing books to top-level executives. They offer strong reporting and drill-down capabilities. These tools must provide information in context to convert information to knowledge.

Executive Support Systems (ESS): An executive information system (EIS) that includes specific decision aiding and/or analysis capabilities.

Explicit knowledge: Formal knowledge that can be conveyed from one person to another in systematic ways such as documents, e-mail, multimedia, etc. Knowledge that's easily codified and conveyed to others.

Extensible Markup Language (XML): A specification developed by the World Wide Web Consortium (W3C) especially for web documents. It allows designers to create their own customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations. These customized tags can provide functionality not available with HTML. For example, XML supports links that point to multiple documents, as opposed to HTML links, which can reference just one destination each.

Heuristic: A rule of thumb that involves or serves as an aid to learning, discovery, or problem solving by experimental and especially trial-and-error methods. Of or relating to exploratory problem-solving techniques that utilize self-educating techniques (as the evaluation of feedback) to improve performance.

Horizontal Portal: A portal which pulls together several vertical portals and which is standardized across an enterprise.

HTML: Short for HyperText Markup Language.

Human capital accounts for the majority of the Corps' intellectual capital, or the *tacit* knowledge that is resident within the mind of each Corps employee, *as well as* the future capacity and potential for learning that we each have. Tacit knowledge includes the skills,

experience, insight, intuition, and judgment shaped by the past and present. An equally important Corps asset is our potential.

HyperText Markup Language (HTML): An authoring language used to create documents on the World Wide Web.

Implicit Knowledge: The sum or range of what has been perceived, discovered, or learned. Implicit Knowledge is contrasted with explicit knowledge.

Information: A message, usually in the form of a document or an audible or visible communication meant to change the way the receiver perceives something, to have an impact on his judgment and behavior. It's data that makes a difference. Patterns in the data. A collection of facts or data: statistical information.

Information Architecture: The art and science of organizing information to help people effectively fulfil their information needs. Information architecture involves investigation, analysis, design and implementation.

Intellectual capital: Includes human capital, social capital and corporate capital that contribute to the growth of the organization. The knowledge and potential of an employee, based on education, experience, learned techniques, and best practices. It is the knowledge resulting from communications, collaboration and interpersonal relationships; ideas, patents and organizational processes; and tangible information resources such as databases, documents, lessons-learned systems, etc.

ISO 9000: Family of quality management and quality assurance standards adopted by ISO (International Organization for Standardization, founded 1947), an international consensus of over 110 countries. ISO 9000, first published in 1987, has been adopted as national standards in more than 80 countries.

Knowledge: The state or fact of knowing. Familiarity, awareness, or understanding gained through experience or study. Knowledge is composed of the tacit experiences, ideas, insights, values, and judgments of individuals. It is dynamic and can only be accessed through direct communication. A fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. Key concepts of knowledge are experience, truth, judgment, and rules of thumb. Actionable information. A defined body of information . . . depending on the definition, the body of information might consist of facts, opinions, ideas, theories, principles, and models (or other frameworks) . . . also refers to a person's state of being with respect to some body of information. These states include ignorance, awareness, familiarity, understanding, facility, and so on. The integration of ideas, experience, intuition, skill, and lessons learned that has the potential to create value for a business, its employees, its products

and services, its customers and ultimately its shareholders by providing information for decisions and improving actions. Information + Context = Knowledge.

Knowledge acquisition: The procedure in artificial intelligence of interacting with an external source, usually a domain expert, to find and organize knowledge for the purpose of transferring the knowledge to an expert system to solve problems.

Knowledge assets: Business data, information, and knowledge.

Knowledge Base: A logical collection of information in a particular domain that has been formalized in the appropriate representation with which to perform reasoning. A dynamic knowledge base is used to store information relevant to solving a particular problem and varies from one problem solving session to the next.

Knowledge Discovery is defined as a nontrivial process that gleans new, understandable, interesting, and potentially useful information from stored data (Fayyad, Piatetsky-Shaprio, and Smyth 1996)¹². Knowledge discovery is a means of extending limited human capabilities by using computer capabilities to analyze large, often complex datasets in order to understand more information than could be previously extracted using conventional means (Wright 2000)¹³.

Knowledge Ecology: Knowledge Ecology is an inter-disciplinary field of theory and practice that provides tools and methods for freeing the human genius, individual and collective. It is the component of KM that focuses on human factors -- namely, the study of personal work habits, values, and organizational culture.

Knowledge Half-Life: The point at which the acquisition of new knowledge is more cost-effective and offers greater returns than the maintenance of existing knowledge.

Knowledge Management (KM): Knowledge Management is an integrated, systematic approach to identifying, managing, and sharing all of an enterprise's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual workers. Informally, KM is a way of putting information, communities, processes, and tools together to allow people to do better work and make better decisions

Knowledge map (K-map): A representation of concepts and their relationships (e.g., a hierarchy, a taxonomy, or a network), and is a navigational aid that enables a user to hone in rapidly on the desired concept, and then follow links to relevant knowledge sources (information

¹² Fayyad, Usama M., S. George Djorgovski, and Nicholas Weir. 1996. Automating the analysis and cataloging of sky surveys. In *Advances in knowledge discovery and data mining*, eds. Usama M. Fayyad, Gregory Piatetsky-Shapiro, Padhraic Smyth, and Ramasamy Uthrusamy, 472-93. Menlo Park, CA: AAAI Press/The MIT Press.

¹³ Wright, Margaret B. 2000. Using domain knowledge to determine record usability in knowledge discovery, diss.

or people). K-maps model explicit information about people, processes and their information objects, plus the relationships among these elements.

Knowledge mapping: A process that provides a "picture" of the knowledge an organization needs to support business processes.

KSF: Short for Key Success Factor.

Learning Organization: Term popularized by Peter Senge's *The Fifth Discipline*, meaning a corporate culture that cherishes continuous improvement.

Liaison: A liaison is a channel for communication between groups; "he provided a liaison with the guerillas."

Link or Hyperlink: A link is a connection between 2 pieces of information. It is a way of getting information from another server rather than making a copy of the information on your server. For example, you would generally not make a duplicate copy of an Army regulation, you would link to the Army's publication library to make sure you had the current version.

Metadata: Data about data. Metadata describes how and when and by whom a particular set of data was collected, and how the data is formatted. Metadata may include descriptive information about the context, quality and condition, or characteristics of data.

Performance Measure: An indicator that can be used to evaluate quality, cost, or cycle time characteristics of an activity or process usually against a target or standard value.

Portal A portal can be defined as software that provides access through a browser to a wide range of data stores – e-mail, data bases, analytical software, the Internet, billing and sales records, and other sources. A portal is different from other web pages in that a portal is customizable by the user as his needs and interests change.

Process: (1) A systematic series of actions directed to some end. (2) A continuous action, operation, or series of changes taking place in a definite manner. (e.g. getting to a destination=process performed by pilot).

Process portal: Software which focuses the user of the Portal to the explicit knowledge required to solve his/her particular problem, or deal with a particular situation or series of events. Changes Implicit Knowledge to Explicit Knowledge.

Push: In client/server applications, "pushing" is sending data to a client without the client requesting it. The World Wide Web is based on a pull technology where the client browser must request a web page before it is sent. Broadcast media, on the other hand, are push technologies because they send information out regardless of whether anyone is tuned in.

Repository: A mechanism for storing any information that has to do with the definition of a system at any point in its life cycle. Repository services would typically be provided for extensibility, recovery, integrity, naming standards and a wide variety of other management functions.

Resource: An object in competition with another like object. A resource is a scarce object.

Rules of Thumb: Shortcuts to solutions to new problems that resemble problems previously solved by experienced workers; heuristics.

Search & deliver: Bringing knowledge to teams and communities through portals built on personalized cross-enterprise search and delivery technologies.

Search Engine: A search engine is a piece of software which helps a person find a piece of information. A public search engine such as Google or AltaVista uses programs that visit each web site on the Internet and copy each page into a database on its server. A user then asks the program to look through the database for a word the user enters. The programs that visit each site are called spiders or robots, and visiting each site is called crawling.

Signature Skill: An ability by which a person prefers to identify himself or herself professionally.

Social capital is the intellectual capital resulting from communications, collaboration and interpersonal relationships. It includes human and virtual networks, relationships and the interactions across these networks built on those relationships.

Tacit knowledge is personal knowledge that resides within an individual. It relies on experiences, ideas, insights, values, and judgments. It is knowledge that is resident within the mind, behavior, and perceptions of individuals. Knowledge developed and internalized by an individual over a long period of time. It incorporates so much accrued and embedded learning that its rules may be impossible to separate from how an individual acts.

Taxonomy: A framework for the classification and arrangement of objects.

Team: A number of persons associated in the performance of a task.

Topic Area: A cross-functional grouping of business areas (grouping of processes). Examples of topic areas are Finance, Program Management, Administration, and Research.

Vertical Portal: A vertical portal is a portal which serves a specific community of interest. An organization may have several vertical portals, but will probably have only one Horizontal portal.

Virtual: You will see this term appear before various computer terms to indicate simulation technology that enables you to cross boundaries and experience something without needing it's physical presence, as virtual theme parks, virtual communities.

Virtual team: A Virtual Team is three or more dispersed people working on the same common goal using information technology. The goal or project may be a product or service. The technology may range from simple e-mail to advanced digitized design. The team electronically shares the same information, concurrently when necessary. The team works effectively together trusting other members that they may never meet. The short definition is moving work to people.

Work cell: A collection of roles in an organization that crosses functional barriers.

Workflow: A system whose elements are activities, related to one another by a trigger relation, and triggered by external events, which represent a business process starting with a commitment and ending with the termination of that commitment.

XML: Short for Extensible Markup Language.